

Activity 1

Where are the Volcanoes?

Think About It

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- Can volcanoes form anywhere on Earth?
- Why or why not?



WHAT DO YOU THINK?

Activity 1

Investigate

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2a. What do each of the four kinds of triangles represent?

2b. What do the solid red lines represent?







Denver latitude 39.78°N
longitude 104.88°W

2d. Does the map cover the entire Earth? Explain.

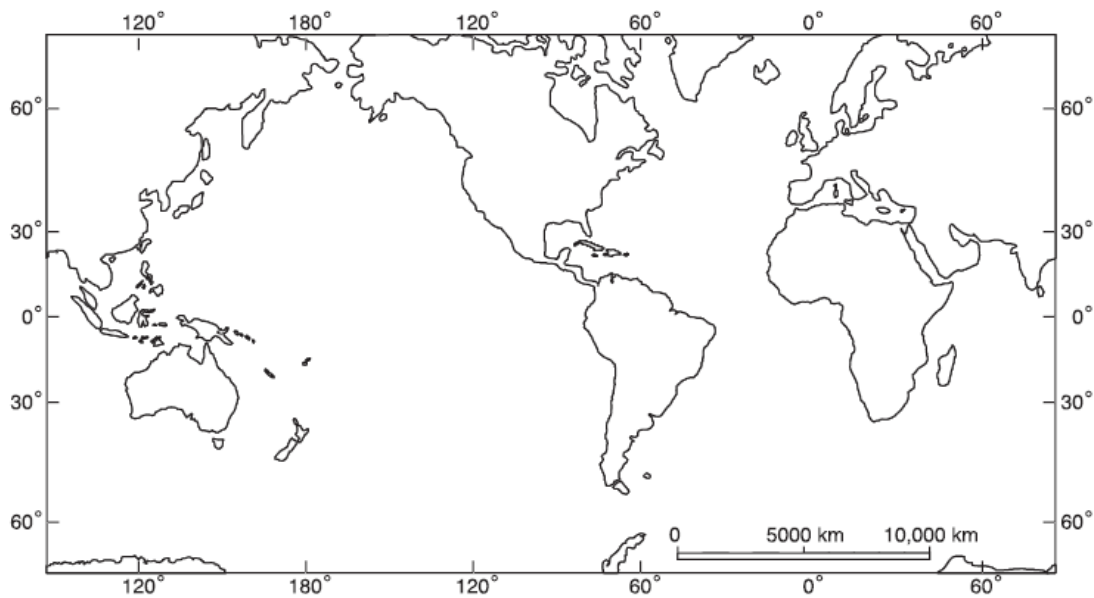
3a. Make a data table to record your results.

4a. When volcanoes follow a linear pattern, draw a thick line on the world map.

4b. For the red lines that appear on the USGS map, draw thin lines on your copy of the map.

Volcano	Latitude	Longitude
		
		
		
		
		
		





4c. Where volcanoes are less concentrated, outline (circle) the area that they cover.

5a. Are most volcanoes found in random places or do they show a trend or pattern? Explain.

5d. Does the USGS map show any volcanoes associated with the red lines in the ocean basins?

5e. What information does the map give about the size or hazard of the volcanoes?

5f. Could a volcano form in or near your state? Support your answer with evidence from this activity.

Activity 1

Digging Deeper

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<http://www.brainpop.com/science/earthsystem/volcanoes/>

Learning Objective: In writing, SWBAT describe patterns in the global distribution of volcanoes using academic language.

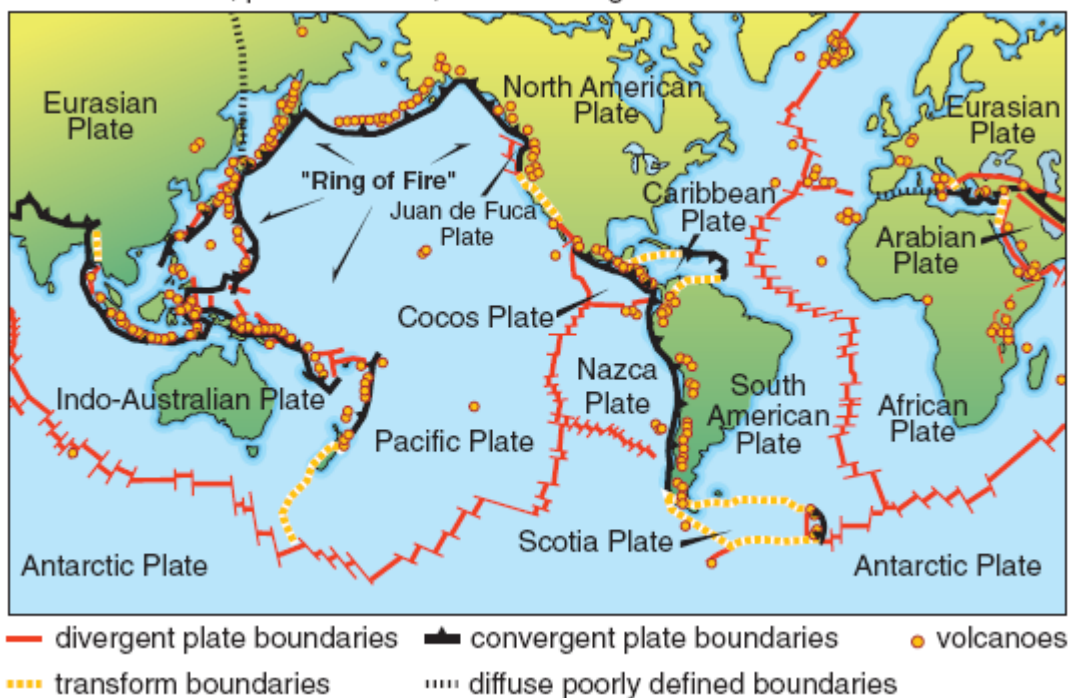
Locations of volcanoes

they are mostly found along the edges of certain continents and floors of all oceans

Volcanoes form:

1. where plates are moving apart
2. where plates are moving together
3. at hot spots

active volcanoes, plate tectonics, and the "Ring of Fire"



Learning Objective: In writing, SWBAT explain how mid-ocean ridges and rift valleys form using academic language.

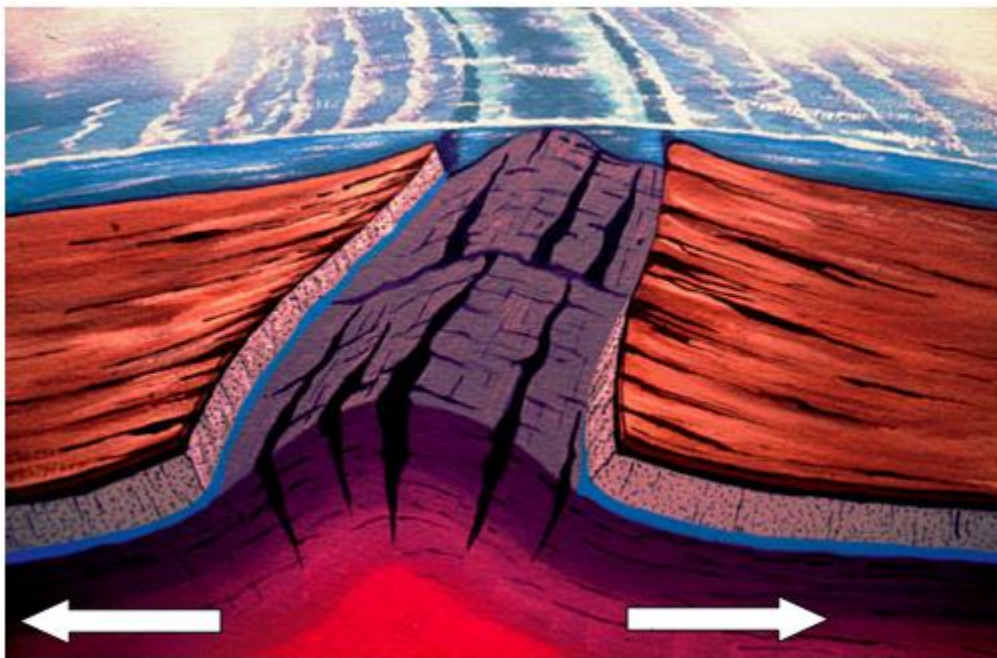
Mid-ocean ridge

a continuous mountain range on the bottom of the seafloor

They form at divergent plate boundaries, where plates are moving apart

How a mid-ocean ridge forms

magma rising from the mantle pushes up on the crust, creating a mid-ocean ridge



They can be found in all of the world's oceans



<http://oceanexplorer.noaa.gov/explorations/03fire/logs/ridge.html>

<http://www.pbs.org/wnet/savageearth/animations/rift-spread.html>

<https://www.edumedia-sciences.com/en/media/674-mid-ocean-ridge>

Rift valley

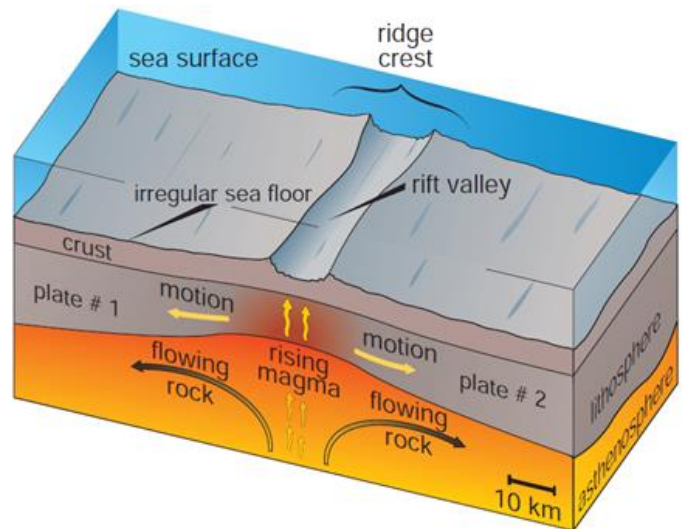
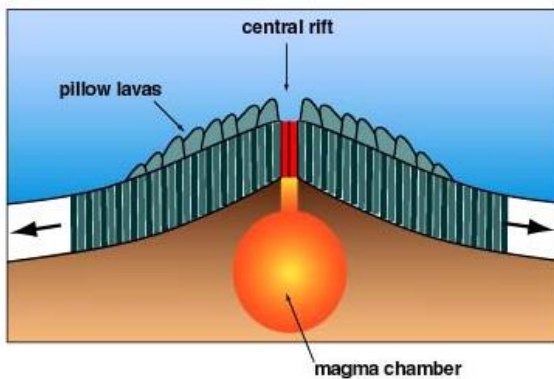
a valley with steep sides that forms where two tectonic plates move apart

Rift valleys
under water

form at the top of a mid-ocean
ridge

At divergent plate boundaries, the ridge is pulled apart, creating a deep crack

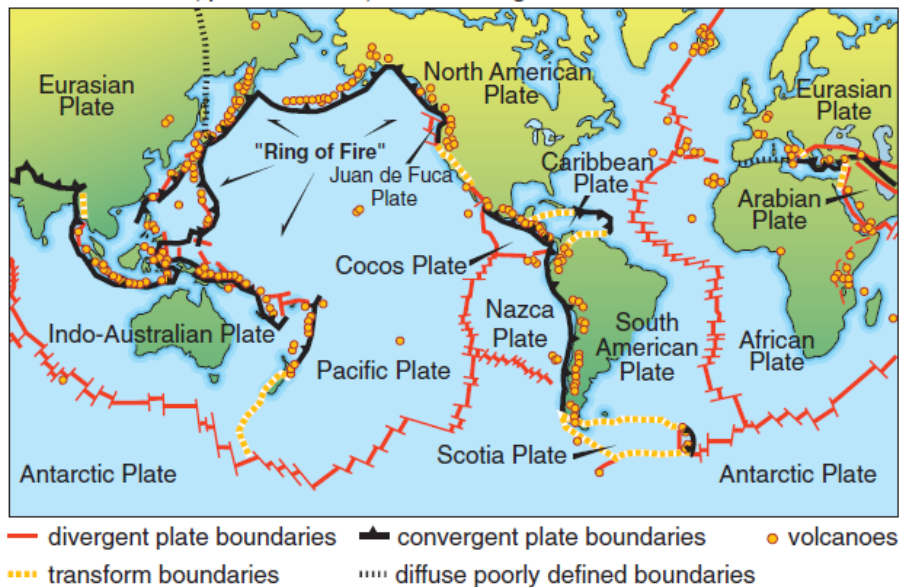
Rising magma fills the crack and hardens, creating new ocean crust at the bottom of the valley



Ring of Fire

a pattern of volcanoes around the edges of the Pacific Ocean plate

active volcanoes, plate tectonics, and the "Ring of Fire"

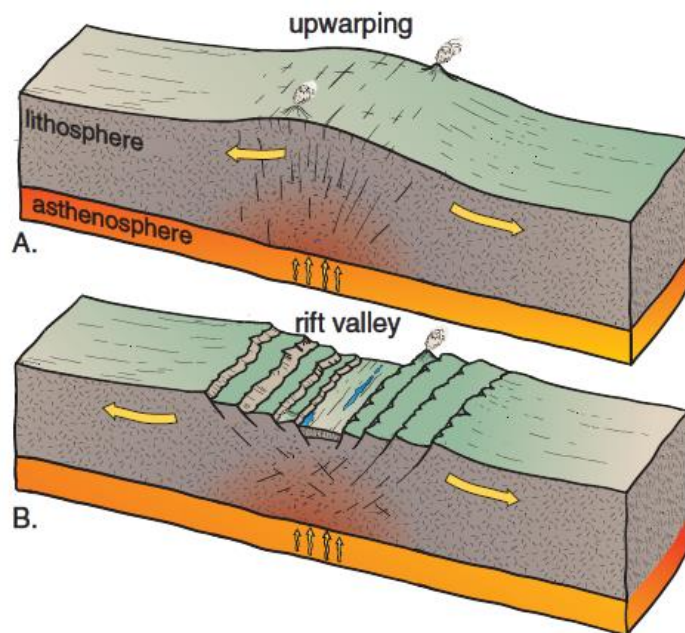


Rift valleys on land

form where continental crust is pulling apart

The continental plate is stretched and broken

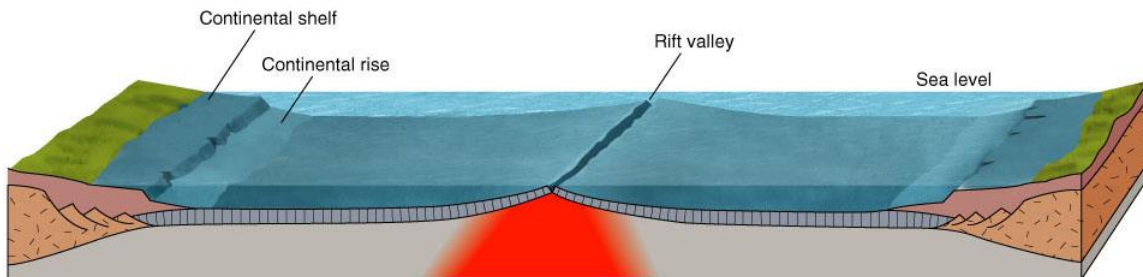
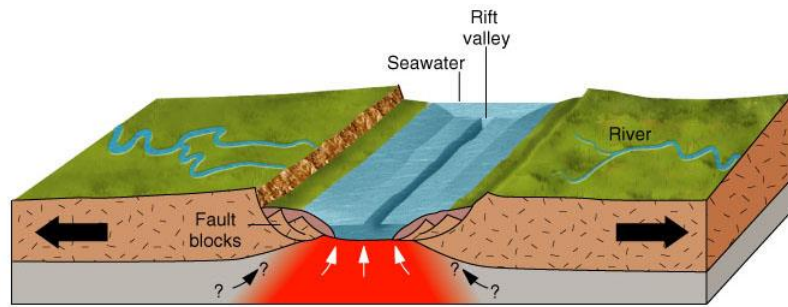
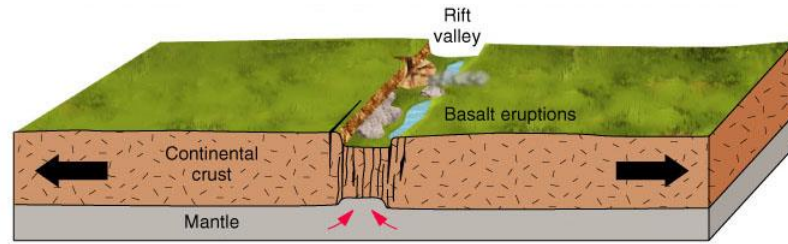
One of the breaks opens up to form the rift valley



Red Sea

formed when the Arabian Plate moved apart from the African Plate

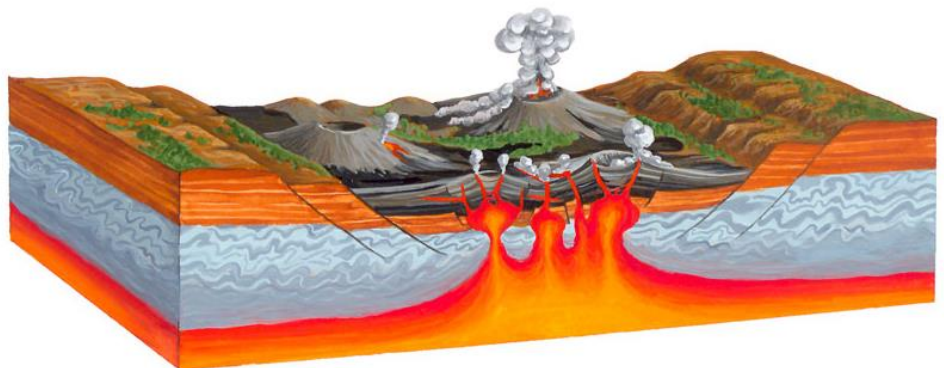
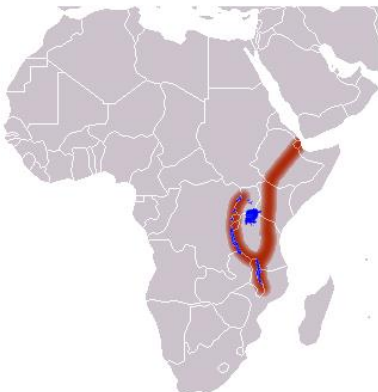
The Indian Ocean flooded the rift valley and created the Red Sea



East African Rift

formed when Africa began to pull apart

Several volcanoes have formed in the rift



http://highered.mcgraw-hill.com/olcweb/cgi/pluginpop.cgi?it=swf::640::480::/sites/dl/free/0072402466/30425/19_21.swf::Fig. 19.21 - Evolution of a Divergent Plate Boundary

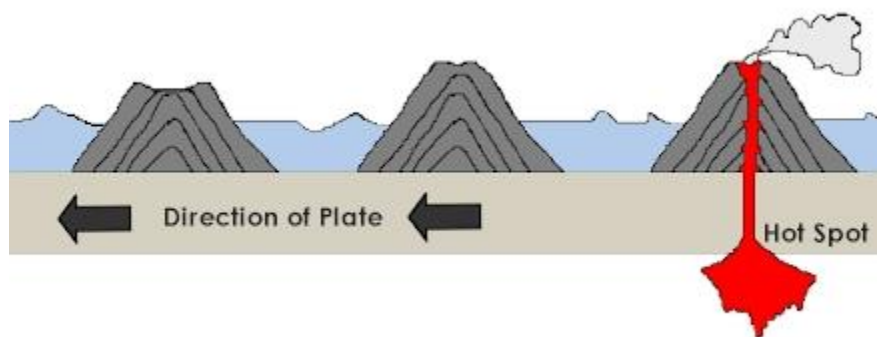
http://esminfo.prenhall.com/science/geoanimations/animations/35_VolcanicAct.html

http://www.wwnorton.com/college/geo/egeo2/content/animations/2_7.htm

Learning Objective: In writing, SWBAT explain how a hot spot forms and provide an example of a hot spot using academic language.

Hot spot

a stationary area of rising magma that breaks through Earth's crust to form volcanoes



http://www.wwnorton.com/college/geo/egeo/flash/2_10.swf

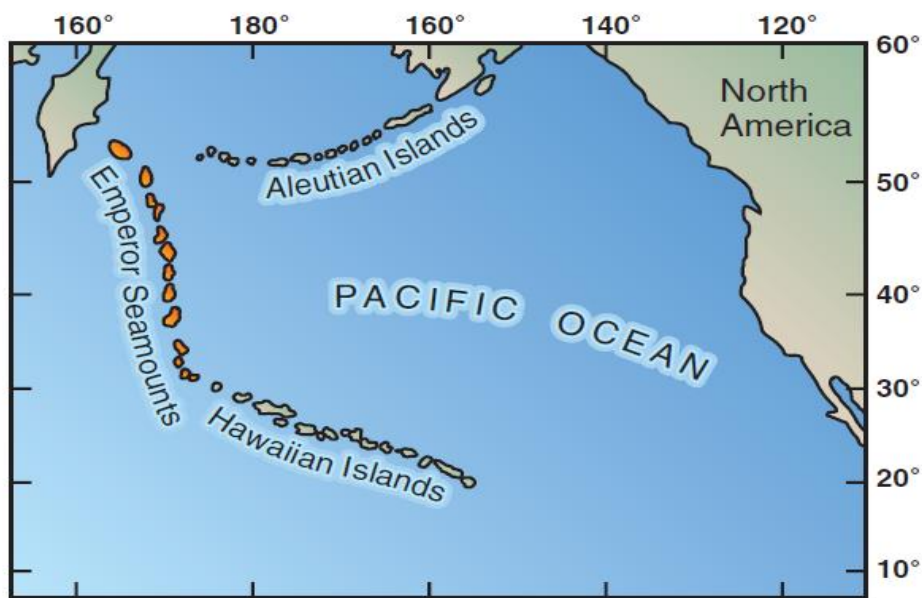
<http://education.sdsc.edu/optiputer/flash/hotSpots.htm>

http://www.classzone.com/books/earth_science/terc/content/investigations/es0810/es0810page03.cfm

Hawaiian Islands are an example of a hot spot

As the Pacific Plate moves to the northwest, it passes over the fixed hot spot

Magma from the hot spot punches its way through the moving plate to form a chain of islands



Activity 1

Check Your Understanding

Date

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1. What is the Ring of Fire, and where is it located?
2. Describe the pattern of volcanoes found on land.
3. Describe how rift valleys are formed on land.
4. How did the Hawaiian Islands form?